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Atty. Doc. No. 2002P19841WOUS

REMARKS

Claims 13-24 are in the application. Claims 13, 16-19 and 22-24 were rejected as anticipated by Clark (4,962,586). Claims 14 and 20 were rejected under Section 103 based on Clark in view of Komai (5,814,274). Claims 15 and 21 were determined to define allowable subject matter, but were objected to as depending from rejected claims. Applicants respectfully request reconsideration of the rejections and allowance of the present application in view of the amendments and argument now presented

Response to the Rejections under 35 U.S.C. 102

Each of the independent claims 13 and 19 has been amended to more clearly define patentable subject matter relative to the Clark reference. One basis for distinguishing claim 13 over all of the art of record is that it now defines a first material "characterized by a low stability during the tempering process relative to 1 CrMoV steel." None of the prior art teaches or suggests this feature. In fact, this feature, according to example embodiments described in the specification, can allow reduction in hardness about a weld region, e.g., in the heat-affected zones. None of these features are identified or noted as advantageous by the prior art. Rather, it is only the applicants who teach the features of claim 13. Therefore it is appropriate to allow this claim.

The process of independent claim 19 now more expressly requires "joining the first and second materials to one another by a single structural weld." It is not certain whether the examiner rejected this claim based on a reading of this claim upon a process including more than one structural weld. Now, with the amendment to claim 19, the invention is fully distinguished because, as indicated at col. 5, lines 6 ff, the Clark reference discloses a second weld, i.e., in addition to the weld identified by the examiner at col. 4, lines 4-9. For at least these reasons claim 19 is allowable over the art of record.

Claims 16-18 which depend from claim 13 are also distinguishable over the art of record. Claim 16, requiring a single structural weld seam ... arranged between the first material and the

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second material, is allowable for reasons similar to those explained above with respect to claim 19.

Claim 17 now requires that the tempering process is characterized by a temperature between 600 C and 640 C thereby allowing characteristic hardness in a heat-affected zone of the first material to be reduced. According to claim 18 the tempering process is characterized by a temperature between 600 C and 640 C thereby allowing internal stress in a heat-affected zone of the first material to be reduced.

Claims 22-24 which depend from claim 19 are also patentably distinct over the art of record. According to claim 22 the first material comprises a heat-resistant steel having undergone a tempering process and the first material is characterized by a low stability during the tempering process relative to 1 CrMoV steel. The prior art is devoid of this feature.

According to claim 23, the tempering process is performed at a temperature between 600 C and 640 C thereby allowing characteristic hardness in a heat-affected zone of the first material to be reduced. The tempering process of claim 24 reduces characteristic hardness in a heat-affected zone of the first material to produce a rotor for use in a steam turbine. The features defined in claims 23 and 24 are not found in the art of record.

Response to the Rejections under 35 U.S.C. 103

In rejecting claims 14 and 20 based on Clark in view of Komai, the examiner argues that it would have been obvious to incorporate CrMoNiWV steel to provide a shaft having high temperature strength and excellent weldability as taught by Komai. Applicants disagree. There is simply no motivation to select applicants' combination of a 2 CrMoNiWV steel for the first material and a 3.5 NiCrMoV steel for the second material. None of the prior art suggests this choice and there is no precedent for using this combination of materials in a turbine shaft. While the examiner may be capable of finding elements of applicants' claims in the prior art, it is only in hindsight view of applicants' disclosure that the examiner has been able to make the combination. By way of example, applicant teaches that use of 2 CrMoNiWV steel can be

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advantageous for purposes of reducing hardness and internal stresses during a tempering process. However, none of the art of record recognizes this motivation for using 2 CrMoNiWV steel in a shaft. There is simply no teaching in the references that would cause one skilled in the art to select applicants' claimed combination instead of a conventional combination known in the prior art.

Conclusion

For all of these reasons each of the claims as now presented is allowable and allowance of the application is requested. The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, or to credit any overpayments, to Deposit Account No. 19-2179.

Respectfully submitted,

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